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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,115	06/27/2003	James T. Gleeson	KSU.P0213	8164

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EXAMINER	
DI GRAZIO, JEANNE A	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/609,115	GLEESON ET AL.	
	Examiner	Art Unit	
	Jeanne A. Di Grazio	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 December 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims

Claims 1-7 are pending.

Priority

No priority is claimed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 6,122,024 (to Molsen et al.).

As to claim 1, Molsen is drawn to switchable liquid crystal devices. Molsen teaches and discloses, in reference to Figure 1, a cell defined between alignment layers (3 and 6)(Column 4, Line 47), with a first cell wall (transparent substrate 1) spaced from a second cell wall (transparent substrate 4), electrodes disposed on facing surfaces (electrodes, 2 and 5) of the first (1) and second (4) cell walls.

Molsen does not explicitly specify in so many words "an array of nematic liquid crystal convective rolls, wherein said convective rolls are arranged periodically in a space between said

first cell wall and said second cell wall and a polymeric network stabilizing said array of nematic liquid crystal convective rolls."

However, in another preferred embodiment, Molsen does in fact teach and disclose a polymerizable mixture of: a helical polymer network and substantially non-chiral liquid crystal and means for switching the cell between a first optical state and a second optical state different from the first optical state (Column 1, Lines 46-52). Further, the liquid crystal is nematic (Column 1, Line 53) and the switching means is an electric field applied across the electrodes (Column 1, Lines 66-67). Furthermore, Molsen teaches the use of a precursor that is capable of forming a helical polymer network (Column 2, Lines 18-23). Molsen also teaches the incorporation of a chiral dopant (Column 3, Lines 42-45).

Please note that Applicant's Specification states "[w]hen subjected to an externally applied electric field, nematic liquid crystal maintained between substrates can spontaneously self-assemble into a regular array of convective rolls ..." (Specification at page 2, lines 11-13). Applicant's Specification also states that "... polymerizable mixture includes a nematic liquid crystal, dopant, and polymerizable precursor. This polymerizable mixture is formed into an array of nematic liquid crystal convective rolls through application of an electric field across electrodes and the roll structure is stabilized through subsequent polymerization and/or cross-linking of the polymerizable precursor." (Specification at page 5, lines 2-6).

Because in another preferred embodiment, Molsen teaches Applicant's polymerizable mixture as noted and switching means, it may therefore be understood to those of ordinary skill in the art that there is an array of convective rolls periodically arranged in a space between the

substrates and that the convective rolls are either stabilized or switched at least between two different states.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to form said array of convective rolls at least for the reasons as set forth in Molsen: to produce broadband switchable reflectors and filters with high reflectivity of incident light and relatively low temperature dependence of selectively reflected color (Column 4, Lines 11-14).

Thus, claim 1 is rejected.

As to claims 2-3, based upon the above Molsen polymerizable mixture and switching means, it may be presumed that the rolls are arranged with a given grating spacing and structure factor.

Thus, claims 2 and 3 are rejected.

As to claim 4-7, Applicant's method for producing a diffraction grating would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made in view of the structure (polymerizable mixture) as taught and disclosed by Molsen as previously noted.

Thus, claims 4-7 are rejected.

Response to Arguments

Applicant's arguments filed December 6, 2005 have been fully considered but they are not persuasive.

Applicant argues that "Molsen's teaching on polymerizable mixtures and switching means is only one facet of the present invention. Molsen's teaching does not extend to causing the convective rolls to form. ... Rather, the rolls only form with the appropriate choice of neamtic liquid crystal properties, as detailed on page 5, lines 8-14 of the present application, and appropriate choice of frequency and amplitude of the applied electric field." (Remarks at page 3).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., See above) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant has not claimed the necessary critical properties and frequency and amplitude for the formation of said convective rolls.

Further, please note that Applicant's Specification states "[w]hen subjected to an externally applied electric field, nematic liquid crystal maintained between substrates can spontaneously self-assemble into a regular array of convective rolls ..." (Specification at page 2, lines 11-13). Applicant's Specification also states that "... polymerizable mixture includes a nematic liquid crystal, dopant, and polymerizable precursor. This polymerizable mixture is formed into an array of nematic liquid crystal convective rolls through application of an electric

field across electrodes and the roll structure is stabilized through subsequent polymerization and/or cross-linking of the polymerizable precursor." (Specification at page 5, lines 2-6).

Molsen teaches Applicant's properties, as noted, and the requirements to form said convective rolls.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (571)272-2289. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeanne Andrea Di Grazio
Patent Examiner
Art Unit 2871

JDG

ANDREW SCHECHTER
PRIMARY EXAMINER